CLAIMS

1. A manufacturing monitoring system used to determine the efficiency of a production plant, an assembly or a process line or the components of that assembly or a process line, comprising:

means for gathering data relating to the efficiency of the production plant, the assembly line or the components of the assembly line,

said data being selected from the group consisting of unit output values, downtime occurrences, downtime duration, downtime incident codes, downtime categorization, action items, minutes ran, hours scheduled, capable rate, actual output, idle time, total time, waste analysis values, or combinations thereof;

means for storing the gathered data;

means for calculating production efficiency based on the gathered data to provide calculated data;

means for communicating the gathered data and the calculated data within said system; and

means for displaying the calculated data.

2. The manufacturing monitoring system in accordance with claim 1 further comprising:

means for displaying the gathered data.

3. The manufacturing monitoring system in accordance with claim 1 further comprising:

means for storing the calculated data.

4. The manufacturing monitoring system in accordance with claim 1 wherein

said means for gathering data is circuitry that monitors the condition and operation of an assembly or a process line component or subcomponent.

5. The manufacturing monitoring system in accordance with claim 4 wherein

said circuitry used to monitor the condition and operation of an assembly or a process line component or subcomponent is a programmable logic controller.

6. The manufacturing monitoring system in accordance with claim 1 wherein

said means for gathering data is an input device capable of sending or receiving data selected from the group consisting of an electronic terminal, a personal computer, a computer, a data processor, a handheld data device, or combinations thereof.

7. The manufacturing monitoring system in accordance with claim 6 wherein

said means for gathering data is an input device for sending or receiving data and which allows the operator to batch enter the data.

8. The manufacturing monitoring system in accordance with claim 1 wherein

said means for calculating production efficiency is a data processor.

9. The manufacturing monitoring system in accordance with claim 1 wherein

said means for storing the gathered data is a database.

10. The manufacturing monitoring system in accordance with claim 1 wherein

said means to communicate the information includes the Internet or an intranet.

11. The manufacturing monitoring system in accordance with claim 1 wherein

said means to display the information includes a terminal, computer, handheld device, monitor or other humanly perceptible display.

12. The manufacturing monitoring system in accordance with claim 1 wherein

said calculated data provides an efficiency report.

13. A manufacturing monitoring system used to determine the efficiency of a production plant, an assembly or a process line or the components of that assembly or a process line, comprising:

data circuitry to gather data relating to the efficiency of the production plant, the assembly line or the components of the assembly line,

said gathered data being selected from the group consisting of unit output values, downtime occurrences, downtime duration, downtime incident codes, downtime categorization, action items, minutes ran, hours scheduled, capable rate, actual output, idle time, total time, waste analysis values, or combinations thereof;

a data processor for receiving the gathered data and for performing calculations with at least some of the gathered data to provide calculated data; and

a display in communication with the data processor to display the calculated data.

14. The manufacturing monitoring system in accordance with claim 13 further comprising:

a database in communication with the data processor for receiving and storing the calculated data.

15. The manufacturing monitoring system in accordance with claim 13 wherein

the calculated data provides an efficiency report.

16. The manufacturing monitoring system in accordance with claim 13 wherein

said data circuitry monitors the condition and operation of an assembly or process line component or subcomponent.

17. The manufacturing monitoring system in accordance with claim 16 wherein

said data circuitry is a programmable logic controller.

18. The manufacturing monitoring system in accordance with claim 13 wherein

said data processor is an electronic terminal, a personal computer, a computer, a handheld computing device, or combinations thereof.

19. The manufacturing monitoring system in accordance with claim 13 wherein

said data circuitry is an input device which allows the operator to batch enter the gathered data.

20. The manufacturing monitoring system in accordance with claim 13 wherein

said gathered data are communicated over the Internet or an intranet.

21. The manufacturing monitoring system in accordance with claim 13 wherein

said display for displaying the gathered data or the calculated data is a part of a computer terminal, a personal computer, a handheld data device, or a monitor.

22. A manufacturing monitoring system used to determine the efficiency of a production plant, an assembly or a process line or the components of that assembly or a process line comprising:

an input layer to gather data relating to the efficiency of the production plant, the assembly line or the components of the assembly line,

said data being selected from the group consisting of unit output values, downtime occurrences, downtime

duration, downtime incident codes, downtime categorization, action items, minutes ran, hours scheduled, capable rate, actual output, idle time, total time, waste analysis values, or combinations thereof;

a data processing layer to calculate the production efficiency based on the said data gathered by the input layer;

a storage layer for storing the data gathered by the input layer and for storing the data calculated by the data processing layer;

a communication layer to communicate the data stored at the storage layer within the manufacturing monitoring system; and

a presentation layer to display the data stored at the storage layer.

23. A manufacturing monitoring method for determining the efficiency of a production plant, an assembly or a process line or the components of that assembly or a process line; said method comprising the steps of:

gathering data related to the efficiency of the production plant, the assembly line or the components of the assembly line;

selecting said gathered data from the group consisting of unit output values, downtime occurrences, downtime duration, downtime incident codes, downtime categorization, action items, minutes ran, hours scheduled, capable rate, actual output, idle time, total time, waste analysis values, or combinations thereof;

calculating a production efficiency based on the gathered data with a data processor;

storing the gathered data and the calculated data in a memory;

communicating the gathered data and the calculated data to other computers, terminals, servers, or databases; and

displaying the calculated data on a display.

24. The method of determining the efficiency of a production plant, an assembly or a process line or the components of that assembly or a process line as claimed in claim 23, further comprising the additional step of:

displaying the gathered data on a display.

25. The method of determining the efficiency of a production plant, an assembly or a process line or the

components of that assembly or a process line as claimed in claim 23, further comprising the additional step of:

communicating the calculated data over the Internet or an intranet.

26. The method of determining the efficiency of a production plant, an assembly or a process line or the components of that assembly or a process line as claimed in claim 23, further comprising the additional step of:

communicating the gathered data over the Internet or an intranet.

27. The method of determining the efficiency of a production plant, an assembly or a process line or the components of that assembly or a process line as claimed in claim 23, further comprising the additional step of:

storing the gathered data in a database.

28. The method of determining the efficiency of a production plant, an assembly or a process line or the components of that assembly or a process line as claimed in claim 23, further comprising the additional step of:

displaying the calculated data in a format viewable by a web-browser.

29. The method of determining the efficiency of a production plant, an assembly or a process line or the components of that assembly or a process line as claimed in claim 23,

wherein the step of calculating a production efficiency provides an efficiency report.

30. The method of determining the efficiency of a production plant, an assembly or a process line or the components of that assembly or a process line as claimed in claim 23, further comprising the additional step of:

entering gathered data by batch entry into said system.

31. The method of determining the efficiency of a production plant, an assembly or a process line or the components of that assembly or a process line as claimed in claim 23, further comprising the additional step of:

communicating the calculated data over the Internet or an intranet.

32. The method of determining the efficiency of a production plant, an assembly or a process line or the components of that assembly or a process line as claimed in claim 23, wherein

the step of gathering data related to the efficiency of the production plant, the assembly line or the components of the assembly line includes gathering data with a programmable logic controller.

33. The method of determining the efficiency of a production plant, an assembly or a process line or the components of that assembly or a process line as claimed in claim 23, wherein

the step of gathering data related to the efficiency of the production plant, the assembly line or the components of the assembly line includes monitoring the condition or operation of an assembly or a process line component or subcomponent.